

# Review of Recent Literature

Miller, S. F. Collectors gobble up Carnivorous Plants. *EnviroSouth Magazine*, Vol. 2, No. 3, 1978.

The Author discusses the possible extinction of several *Sarracenia* species, *Dionaea* and *Pinguicula* species in the U.S. due to commercial collecting, herbicide spraying and urban or road expansion. She quotes extensively from the New York Botanical Garden article written by George Folkerts who describes in detail how each of the threatened or endangered species of CP reached that status. Two color photos accompany this thoughtful article.

Robins, R. J. Studies on Secretion and Absorption in *Dionaea muscipula* Ellis. Pembroke College, Trinity, England, 1978.

(The full thesis, of which this is an abstract, will be published late in 1979.)

The ultrastructure and physiology of the secretory glands of *Dionaea muscipula* Ellis (The Venus's Flytrap) have been examined in order to investigate the mechanism of obtaining nutrients practised by this plant.

The dynamic changes in the ultrastructure following stimulation have been examined. Particularly prominent features are a decrease in the size of the main cell vacuole and an increase in smaller vacuoles. Important changes are also observed in the distribution of ribosomes within the secretory cells. By the use of high resolution histochemical, cytochemical, and autoradiographic methods, it is shown that the secretory hydrolases are probably stored in a sub-compartment of the vacuole, the smooth endoplasmic reticulum and the cell walls. It is shown by quantification of the cell and by autoradiography that the dictyosomes do not appear to be involved in the discharge of secretion, but

rather that this probably occurs both by direct fusion of the endoplasmic reticulum with the plasmalemma and by the migration of vesicles derived from the endoplasmic reticulum directly to the cell periphery.

Evidence is presented to show that, in addition to being released from a site of storage, some of the protein discharged is synthesized *de novo* during the cycle. This is suggested by the observed formation of numerous polysomes associated with the endoplasmic reticulum in the secretory cells and confirmed by radiolabelling techniques.

A preliminary analysis of the enzymology of the secretion is presented and it is tentatively suggested that there are several peptide hydrolase activities present, possibly including a serine proteinase and a carboxypeptidase. It is shown that the secretion can hydrolyse chitin and has peroxidase activity.

By following the absorption of chloride ions, it is shown that the plasmodesmata are important in the uptake of these ions. The overall architecture of the gland is considered in relation to the possible pathway of absorption of digestive products and it is suggested that the plasmodesmata are probably the primary route for the movement of nutrients into the glands.

A model is put forward, based on these observations, for the way in which the gland conducts a bi-directional flow of material. It is hypothesized that, while absorption takes place via the symplast, secretory proteins are discharged directly into the apoplast and flushed from there by hydrostatic pressure generated by the inner secretory cells. Suggestions are made for how this might be achieved.

Wallace, Robert L. 1978. Substrate selection by larvae of the sessile rotifer

*Ptygura beauchampi*. Ecology 59:221-227.

The above species of rotifer is chemotactually attracted by gland hair secretions to its preferred substrate, the trap door region of *Utricularia vulgaris*, activities beginning while the animal is

still a larva. The animal bypasses four co-occurring *Utricularia* spp. with a very similar gland hair and trap door structure, indicating that the stimulus is chemical in nature. This symbiotic relationship is commensal since the plants are apparently not affected by rotifer colonization.



*Nepenthes  
burkei*

Longwood Gardens  
Photograph

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## NEWS AND VIEWS (continued from page 7)

whole summer's growing time, and so now I am collecting rain and snow. I suggest an inexpensive aquarium pH test kit in order to check the water you're using for CP.

I have read that *Dionaea* is not self-pollinating. I found this statement to be untrue in cultivation. I had seed from a hand-pollinated flower that I self-fertilized; now I have a container of seedlings to prove it. There was no chance of cross-pollination since only one plant was flowering at the time, and it was sealed in an indoor terrarium.

ROBERT SYRLIK (217 Drake Ave., Apt. 3J, New Rochelle, NY 10805) reports that in the November issue of "House Plants and Porch Gardens" there is an article on how to build a side lit table garden. With a few modifications, it would make a very good terrarium for CP, especially if growing space is limited. The instructions are very easy to follow. By the time this is published, the November issue will be a back issue, which can be obtained from: House Plants and Porch Gardens, Box 428, New Canaan, CT 06840.